

Y10 Unit 4 Overview- Probability, Equations & Inequalities, Data analysis

Test Window: 9th July 2018- 13th July 2018

Target grade for tests:

You will learn about:

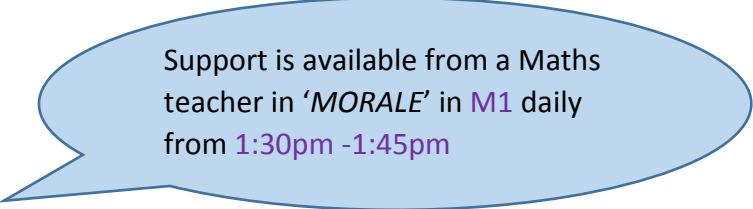
- Conditional probability
- Circle theorems
- Linear inequalities
- Solving quadratic equations algebraically and graphically
- Analysing data using cumulative frequency and box plots

You will be able to:

- Calculate and interpret conditional probabilities with two-way tables, tree diagrams and Venn diagrams.
- Apply and prove the standard circle theorems and use them to prove related results.
- Solve linear inequalities in two variables and represent the solution set using set notation and on a graph.
- Solve quadratic equations algebraically by factorising (including those that require rearrangement)
- Deduce roots of quadratic functions algebraically.
- Find approximate solutions to quadratic equations using a graph.
- Infer properties of populations or distributions from a sample, whilst knowing the limitations of sampling.
- Construct cumulative frequency graphs, and know their appropriate use.
- Interpret, analyse and compare the distributions of data sets through appropriate graphical representation involving discrete, continuous and grouped data, including box plots.
- Interpret, analyse and compare the distributions of data sets through appropriate measures of central tendency including quartiles and inter-quartile range.



<p>Lesson Overview</p> <p><u>UNDERSTANDING RISK (PROBABILITY AND LIKELIHOOD)</u></p> <ul style="list-style-type: none">• Apply the product rule for counting• Use a Venn diagram to sort information in a probability problem• Use a two-way table to sort information in a probability problem• Use a Venn diagram to calculate theoretical probabilities• Use a two-way table to calculate theoretical probabilities• Calculate conditional probabilities using different representations <p><u>CONJECTURING WITH CIRCLE THEOREMS</u></p> <ul style="list-style-type: none">• Know the conditions for creating a right angle with three points on the circumference of a circle• Know that 'the angle in a semicircle is a right angle' (and others – see pedagogical notes)• Form a conjecture from a geometrical situation• Set up a proof• Create a chain of logical steps to create a proof in a geometrical situation• Identify when a circle theorem can be used to help solve a geometrical problem• Use a combination of known and derived facts to solve a geometrical problem• Justify solutions to geometrical problems	<p>Key Words</p> <p>Refer to http://studymaths.co.uk/glossary.php for definitions of the key words</p> <p>Outcome, equally likely outcomes Event, independent event, dependent event Tree diagrams Theoretical probability, experimental probability Random Bias, unbiased, fair Enumerate Set Conditional probability Venn diagram</p> <p>Notation</p> <p>P(A) for the probability of event A Probabilities are expressed as fractions, decimals or percentages. They should not be expressed as ratios (which represent odds) or as words</p> <p>Radius, radii Tangent Chord Theorem Conjecture Derive Prove, proof Counterexample</p> <p>Notation</p> <p>Notation for equal lengths and parallel lines The 'implies that' symbol (\Rightarrow)</p>
---	--

<p>SOLVING EQUATIONS AND INEQUALITIES</p> <ul style="list-style-type: none"> • Understand the use of a graph to represent an inequality in two variables • State the (simple) inequality represented by a shaded region on a graph • Know when to use a dotted line as a boundary for an inequality on a graph • Know when to use a solid line as a boundary for an inequality on a graph • Construct and shade a graph to show a linear inequality of the form $y > ax + b$, $y < ax + b$, $y \geq ax + b$ or $y \leq ax + b$ • Construct and shade a graph to show a linear inequality in two variables stated implicitly • Construct and shade a graph to represent a set of linear inequalities in two variables • Find the set of integer coordinates that are solutions to a set of inequalities in two variables • Use set notation to represent the solution set to an inequality • Solve a quadratic equation of the form $x^2 + bx + c$ by factorising • Solve a quadratic equation of the form $ax^2 + bx + c$ by factorising • Solve a quadratic equation by rearranging and factorising • Identify when a quadratic equation cannot be solved by factorising • Make connections between graphs and quadratic equations of the form $ax^2 + bx + c = 0$ • Make connections between graphs and quadratic equations of the form $ax^2 + bx + c = dx + e$ • Find approximate solutions to quadratic equations using a graph • Deduce roots of quadratic functions algebraically • Solve problems that involve solving a quadratic equation in context <p>ANALYSING STATISTICS</p> <ul style="list-style-type: none"> • Understand the limitations of sampling • Use a sample to infer properties of a population • Know the meaning of the lower quartile and upper quartile • Find the quartiles for discrete data sets • Calculate and interpret the interquartile range • Construct and interpret a box plot for discrete data • Use box plots to compare distributions • Understand the meaning of cumulative frequency • Complete a cumulative frequency table • Construct a cumulative frequency curve • Use a cumulative frequency curve to estimate the quartiles for grouped continuous data sets • Use a cumulative frequency curve to estimate properties of grouped continuous data sets 	<p>(Linear) inequality Variable Manipulate Solve Solution set Integer Set notation Region</p> <p>Notation The inequality symbols: < (less than), > (greater than), ≤ (less than or equal to), ≥ (more than or equal to) When drawing a graph to represent solutions to inequalities in two variables: a dotted line represents a boundary that is not included and a solid line represents a boundary that is included. Set notation; e.g. {-2, -1, 0, 1, 2, 3, 4}</p> <p>(Quadratic) equation Factorise Rearrange Variable Unknown Manipulate Solve Deduce x-intercept Root</p> <p>Categorical data, Discrete data Continuous data, Grouped data Axis, axes Population Sample Cumulative frequency Box plot, box-and-whisker diagram Central tendency Mean, median, mode Spread, dispersion, consistency Range, Interquartile range Skewness</p> <p>Notation Correct use of inequality symbols when labelling groups in a frequency table</p>
<p>Suggested reading or support/ challenge available</p>  <p>Support is available from a Maths teacher in 'MORALE' in M1 daily from 1:30pm -1:45pm</p>	<p>Cross curricular</p> <p><u>SMSC:</u> 1.1 Exploring, understanding and respecting cultural diversity e.g. exploration of different methods of calculation. 3.1 Developing personal qualities and using social skills (regular paired/ group work communication). 3.2 Participating, cooperating and resolving conflicts (paired/group activities). 4.2 Experiencing fascination, awe and wonder of mathematics. 4.4 Using imagination and creativity in learning.</p> <p><u>Literacy:</u> Verbal communication of understanding using key words in the correct context. Development of written communication of methods and strategies to problem solve.</p>

Pixl Maths App

login: PY2415

username: surname followed
by first initial

password: first name

<https://vle.mathswatch.com/vle/>

(video clips and worksheets)

login: school username followed by
@penryn-college

password: **Penryn2016**

www.justmaths.co.uk/online

login: PenrynStudent

password: Penryn

www.doddlelearn.co.uk

login: your name
(capitals for initials no
spaces) followed by year
of entry eg BenSmith13

password: **penryn**

Use your revision guide

Use the code in the front
of your guide to access
your free online revision

www.corbettmaths.com

Perfect for revision.
Including practice exam
questions on specific
topics and the "5-a-day"

NAC:

Science – Use two-way tables to record all the possible outcomes of two events. Understand and use sampling. Construct and interpret cumulative frequency tables and diagrams.

Geography – Use two-way tables to record all the possible outcomes of two events. Understand and use sampling. Construct and interpret cumulative frequency tables and diagrams. Estimate the median, quartiles and inter-quartile range from a cumulative frequency diagram.